DOCUMENT RESUME

ED 061 258 TM 001 162

AUTHOR Yett, Frank A.
TITLE Computer Assisted Tutorial and Testing System (CATTS).
INSTITUTION Pasadena City Coll., Calif.
PUB DATE Nov 71
NOTE 4p.; Paper presented at the Annual Meeting of the California Educational Research Association, November 1971

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Academic Performance; *Computer Assisted Instruction; Computer Oriented Programs; Filing; Individualized Instruction; *Instructional Systems; Instructional Technology; Measurement Instruments; Programed Materials; Questioning Techniques; Response Style (Tests); *Testing Programs; *Tutorial Programs; Units of Study (Subject Fields)

ABSTRACT

CATTS is a computerized service providing question-answer exercises from a subject content file for specific courses, building successive lessons from the file based on each student's immediately previous performance. The text of the file may correlate with textbooks, diagrams, workbooks and supplementary material. Student files include subject, class and instructor identification, lesson-by-lesson performance records, and a variety of measures and indices of performance. (Author)

ED 061258

Abstract

Computer Assisted Tutorial and Testing System (CATTS)

Presented at the

California Educational Research Association
50th Annual Meeting November 18-19, 1971

by

Dr. Frank A. Yett, Professor of Computer Sciences
Pasadena City College, Pasadena, California

CATTS (Computer Assisted Tutorial and Testing System) is a computerized service providing question-answer exercises from a subject content file for specific courses, building successive lessons from the file based on each student's immediately previous performance. The text of the file may correlate with textbooks, diagrams, workbooks and supplementary material. Student files include subject, class and instructor identification, lesson-by-lesson performance records, and a variety of measures and indices of performance.

TM 001 162

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

CALIFORNIA EDUCATIONAL RESEARCH ASSOCIATION

Fiftieth Annual Conference
November 18-19, 1971

Computer Assisted Tutorial and Testing System (CATTS)

Frank A. Yett, Pasadena City College
1570 E. Colorado Blvd. Pasadena, Ca. 91106

CATTS is a computerized service which may be provided in conjunction with a regular program of instruction. CATTS provides "question-answer" exercises from subject content files for specific courses, building lessons from the files based on each student's immediately previous performance.

The system may be used as a tutorial or testing instrument. The text of the files is presently restricted to any expression which can be printed in-line with the usual symbols available on a typewriter. The text may of course be correlated with textbooks, diagrams, workbooks and supplementary material.

Student files include:

1. For each student -- name, identifying code, class code, instructor code, instructor name.

2. Student-by-student, lesson-by-lesson performance record.

3. A variety of measures and indices of performance.

The system prepares a daily listing of all registered students. This listing is arranged alphabetically within class by instructor as a one-line-per-student summary. The summary, in addition to the student's identifying data, includes to date:

1. Number of working days (school days) student has been registered.

2. Number of "lessons" student has submitted.

3. Number of items and the number of correct responses.

4. Individually assigned "standard" rate of successfully completed items, expressed as "items per working day."

5. The student's response ratio -- the number of items correctly answered divided by the number of items provided.

6. The student's quantitative performance ratio -- the ratio of the student's rate of successful item completion to the standard rate assigned.

7. The student's coefficient of performance -- the product of the response and quantitative performance ratios.

8. The number of working days since a lesson was last submitted.

9. "Alert" flags, which cause special exception reports to be produced and system actions to be taken affecting the student, when critical values of certain indices have been generated.

The accompanying figure illustrates the complete record maintained on a daily basis and produced on a weekly basis for each student, or upon request from the instructor.

The "next" lesson for each student includes items which were incorrectly answered, or omitted, on the previous lesson; some fraction (or none, optionally) of correct items may be recycled. Depending upon the total number of items specified for each lesson, the remainder of the lesson is made up of previously unused items from the subject file.

Lesson response may be made on 80-column computer input cards, punched in "free" format (no definite response placement or answer order) on a printing cardpunch machine, or transmitted via remote terminal. The CATTS evaluation of the lesson responses is printed identifying correct, incorrect, and omitted responses. The "makeup" of the next lesson is stated in the form: "Your next lesson follows. All incorrect, omitted, and NN correctly answered questions from this submission are repeated. XX new questions have been included."

The next lesson is produced immediately after the evaluation of the previous lesson.

When CATTS is used as a testing service, the computer-produced lesson or "test" is delivered to the instructor. If administered in a classroom, the test responses are written on a form for that purpose, later completed by the student in the necessary form, when either the cardpunch or terminal is available.

In either lesson or test response, the item number enclosed with dollar signs is followed by the number corresponding to the response chosen. Thus:

$3$45 $4$67 $1$129 or 1 129 3 45 4 67

and other similar free format variations are equally acceptable response sets for a four-item lesson. In this case the answer for "2" was omitted.

Comparison of response sets by students is futile. This is because the items supplied must be matched with a list of responses numbered in coded form, the numbers for which are a function of the student's personal identification code and the number of the lesson or test. The encoded response numbers are sorted ordinally and the corresponding response texts are arranged differently even for those lessons which might have the same items. Thus, the "numbers" submitted in response to a lesson will be different for each student and among all students. In the example above, note that the response code numbers for questions 1, 3 and 4 were encoded 129, 45 and 67.

A complete exposition of the CATTS service is included in Computer Assisted Tutorial and Testing System (CATTS), Yett, F.A., 1971, 43 pp., Illustrated. The author has also prepared an illustrated lecture which can be given upon invitation.

Individual Student Record of Performance

COMPUTER ASSISTED TUTORIAL AND TESTING SYSTEM
COURSE CATTS

DATE: 6/30/70 TIME: 11:52

NAME: SCHRAM W ID: 8740805 CLASS CODE: 83515
INSTRUCTOR: YETT CODE: 9125
STARTING DATE (SD): 3/30/70 WORKING DAYS CHARGED TO DATE (WD): 57

STANDARD RATE OF PERFORMANCE (ST): 5 ITEMS PER WORKING DAY. Y: 0.25 T: 10
TOTAL NUMBER CORRECT RESPONSES(TC): 304 TOTAL NUMBER POSSIBLE RESPONSES(TR): 375
TOTAL NUMBER OF CORRECT RESPONSES PER WORKING DAY (SR): 5.33
NUMBER OF WORKING DAYS SINCE LAST LESSON SUBMISSION: 3

LESSON SCORES

101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
10	8	8	7	5	7	9	10	14	15	16	17	19	12	14	17	19	16	20	18
10	10	10	10	10	15	15	15	15	15	20	20	20	20	20	20	20	20	20	20

121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
9	10	8	10	6															
10	10	10	10	10															

141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	169	160

161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180

181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200

RESPONSE RATIO (RR=TC/TR): 304/375 = 0.81
QUANTITATIVE PERFORMANCE RATIO (QR=SR/ST): 5.33/5.00 = 1.07
COEFFICIENT OF PERFORMANCE (CP=RRxQR): 0.81 x 1.07 = 0.86